EST

Paper Abstracts

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ABSTRACTS

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main threats on the aquatic biodiversity, and proposing some recommendation for conservation of aquatic biodiversity in the study watershed.

To achieve these goals, standard methods were used to identify fish and aquatic vegetation samples collected from the East Tiaoxi River. The obtained results showed that eighty five fish species in the East Tiaoxi River were collected, and thirty five species were endemic to China. Eleven native fish species and three exotic species were newly recorded. About 41 aquatic plant species were recorded in the East Tiaoxi river, including 23 emerged plants, 10 submerged plants and 8 floating plants. In the middle-lower reaches, ship traffic had a negative effect on fish assemblages, especially for small size of fish, which significantly correlated with the turbidity. In the upper streams, non-metric multidimensional scaling (NMDS) ordination revealed that fish assemblages differed along the stream continuum, whereas little apparent change associated with the seasons. Canonical correspondence analysis (CCA) ordinations revealed fish assemblages were significantly related to water quality and habitat structure variables such as distance to source, stream width, altitude, pH, water depth and velocity. In addition, the density of *Leptobotia tchangi*, endemic species in this watershed, was highly and positively correlated with velocity. On the other hand, the body size was significantly and positively related to the river's pebble size.

Habitat alteration, over fishing, pollution and inland navigation are the most significant threats to fish diversity in this watershed. To conserve fish biodiversity in the watershed, the North Tiaoxi River and Middle Tiaoxi River should be set as priority for conservation due to the amount of river engineering being in practice and abundant biodiversity in the upper streams. Meanwhile, constructed /conserving shallow zones or backwater should be applied in the middle-lower reaches. We concluded that, the restoration of river in terms of habitat creation, should be employed, which can positively affect the structure and diversity of fish and sustain a valuable ecological resource for human beings.

#1319
A Comprehensive Comparison between Ose Ii, Mechanical Methods and Chemical Dispersants in Laymen's Terms
Steven Pedigo, (ASEI Corporation, P.O. Box 515 429, Dallas, TX 75251, USA)

Oil Spill Eater II is the name of a non-toxic product which provides the means for moving oil spill response out of its current 19th Century methodology into the realm of advanced technological 21st Century breakthroughs for swiftly addressing and remediating *100% of any spill in any environment*. In comparison, current response methods employed by three major oil companies - BP, Exxon and Shell - are obsolete and obtain dismal results.

Most recently, BP, Exxon, and Shell have utilized *mechanical clean up* on the Gulf of Mexico Deepwater Horizon (DWH) oil blowout, the Yellowstone River oil spill in Montana, and the recent oil spill in the North Sea, respectively. Mechanical clean up in calm seas only has the capability of remediating somewhere between 2 and 8% of a spill; a woefully inadequate response.

Also utilized in the Gulf of Mexico blowout was Exxon's outmoded invention *Corexit*, a chemical dispersant licensed to Nalco Holding Company for manufacturing and distribution. The label on this horrifically toxic dispersant clearly states it can cause kidney failure and death and the MSDS (Material Safety Data Sheet) specifically warns, "Do not contaminate surface water" with it. Additionally, toxicity testing in regards to marine species shows little tolerance by all forms of sea life; thus, applying it on spills as a preferred response method increases the toxicity of the spilled oil on which it is used. Despite this, millions of gallons of Corexit have been sprayed on and injected into the Gulf's wateres.

SESSION 01-02   *Watershed Management*

#571
Sub-Watershed Based Prediction of N and P Loads from Diffuse Sources to Receiving Water
Cevdet Biçer and Mustafa Sait Yazgan (İstanbul Technical University, Turkey)

Since the eutrophication is one of the major environmental problems originating mainly from agriculture, the quantification and characterization of agricultural N and P loads with other diffuse sources is of great importance. The rate of pollution is determined by many approaches, with or without remote sensing and GIS methods. A method was developed in order to predict N and P loads from non-point sources to receiving water. GIS and remote sensing methods together with geographical, agricultural, animal and demographic data of the related area were used in load predictions. As diffuse sources, agricultural areas, forests, grasslands, animal manure, septic tanks, old landfills, and some residential and rural areas were taken into consideration. The method was applied to sub-watersheds of a large basin in Turkey (Burdur Basin) and the results were discussed in the full manuscript. The results of the method were also compared with the data obtained by other methods. It is concluded that when economical or technological resources are limited, this method can be used to easily predict N and P loads to receiving water from non-point sources.

#621
Water Shed Management in Rural India: Traditional Wisdom - Modern Tools
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It has for long been assumed that low-income communities do not know their infrastructure needs, so that decisions have been made by authorities without obtaining information and understanding of household and agricultural water demand. This top-down approach has been the reason for the failure of many water management initiatives, particularly in areas

of erosion and reduced soil fertility. Watershed management plays a cruci⸱ sustainable development along the dry northern fringe of the Indian Peninsula. T⸱ watershed schemes of Bhagalpur District in the state of Bihar, India – Baratanr ⸱ Chanan watersheds, both located in the Chandan drainage basin – have been s⸱ assess the impact on the environment and society. The methodology involved fi⸱ obtaining data on various physical and social parameters, inputs from maps ⸱ data, GIS mapping and final analysis. It is found that there are increases in surfa⸱ availability, ground water level and soil moisture. Rapid soil erosion due to defore⸱ controlled both by treatment and by reforestation procedures. Immediate impact⸱ agriculture productivity, with an increase of irrigated land and single cropping ⸱ giving way to multiple cropping patterns. The case studies show the impor⸱ participatory approach in effective watershed management. Notable also is the in⸱ in standard procedures of watershed management that is based upon t⸱ knowledge and existing resources. Ultimately the sustainability of these pr⸱ gradually paving the way for socio-economic development and gender equi⸱ otherwise deprived zone

#784
Understanding Farmers' Perceptions towards Water Pollution Control in the Delta, China
Xiaoying Yang, Xingzhang Luo, and Zheng Zheng (Fudan University, Shanghai⸱

It is increasingly realized that non-point pollution sources contribute significantly environment deterioration in China. Chinese government has been trying to emphasis in water pollution control towards an integrated watershed approach point source pollution control. Nevertheless, most efforts have been limited to eng projects for end-of-pipe treatment with scarce promising outcomes. Farmers, who the major non-point source pollution dischargers and water environment det⸱ victims, have been largely left out of water pollution control programs. Little rese⸱ been conducted to understand farmers' perceptions of water pollution and their towards water pollution control. To fill in the gap, in-house surveys of more f⸱ randomly selected farmers have been conducted in Yixing, Huzhou, and Shangt⸱ Yangtz River Delta to gain insights of the current situations of fertilizer use, ru⸱ use, rural sewage treatment, and farmers' viewpoints towards water quality a⸱ pollution control in economically developed regions of China. Study results have⸱ widespread dissatisfaction with environmental quality, deficiency in envir⸱ awareness, and lack of willingness to participate among the interviewed farmers⸱ significant improvement with farmers' involvement capacity, it will be extremely ⸱ implement effective watershed pollution control in China.

#972
Study on Nitrogen Existence and Transformation in an Urban River
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Hua Rong (Hohai University, Nanjing, Jiangsu, CHINA)

The Qinhuai River is an important branch of the Yangtze River Delta. With a l⸱ about 110 km, its total area is more than 2600 km^2. It is also called 'the mother the citizen of Nanjing. The Qinhuai River is divided to two parts by the Ming G⸱ the inner-Qinhuai River and the outer-Qinhuai River. In recent years, ⸱ development of social economy brings a lot of pressure to the water enviro⸱ Nanjing. Exogenous and endogenous pollutant emissions without organiza⸱ floodgate control of stagnation, make the Qinhuai river water environment quali⸱ and river silt sediment layer thickness increasing.

Qinhuai River was selected to study the nitrogen existence, nitrogen trans⸱ and anaerobic ammonia oxidation (anammox) bacteria in the overlying water sediments. Physiochemical characteristics of overlying water and sediment sam⸱ the activity of the urease in the sediment samples were analyzed from 11 ⸱ anammox bacteria were detected by molecular biology analysis. Data showed t⸱ the overlying water, ammonia is the main form of nitrogen; in the sediment sam⸱ nitrogen is mainly existing as organic nitrogen. The column culture of the ⸱ showed that the equilibrium concentration of ammonia could reach to 25 mg·L⸱ release rate of 0.1 $mg \cdot L^{-1} \cdot h^{-1}$ and the dissolve oxygen concentration lower than 0⸱ (2) the activity of the urease in the sediments ranged from 1826.98 to 11951.48 ⸱ ·urea⁻¹, indicate a high transform activity of organic nitrogen to ammonia, th⸱ matter in sediment is the main source of ammonia, and ultimately spread to the⸱ water; (3) anammox-specific sequences were amplified from the Outer-Qinh⸱ sediment which affiliated to the "Candidatus Brocadia", but no significant ⸱ sequence were found in Inner-Qinhuai River. Anammox is newly found process o⸱ transformation, and used in sewage treatment plant as an efficient nitrogen process, but in natural anoxic and high ammonia load systems, the anammox rat⸱ low to detect, which will be further studied.

#1081
Facilitating Cooperation in Watershed Management in Ethiopia
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(Department of Environmental Economics, Institute for Environmental Stu⸱ University, Amsterdam, De Boelelaan 1087, 1081 HV, Amsterdam, the Netherlan⸱

This study aims to test the effect of trust and institution in facilitating cooperation upstream and downstream farmers in a watershed. The analysis is based on a c⸱ of an Ethiopian village where upstream unsustainable land and water man⸱ practices caused negative externalities downstream of a watershed. A stand⸱ game was modified in a field experiment involving 40 upstream and 40 do⸱ farmers. Treatment regression was employed to correct for selection bias and impact of different treatments in experimental groups vis-à-vis a control group. T⸱ result revealed that second movers did not respond to the regulation (en⸱